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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,917	01/09/2002	Mark Khesin	59589.000040	3781

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EXAMINER	
OLSEN, KAJ K	

ART UNIT	PAPER NUMBER
1753	

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/040,917	KHESIN ET AL.	
	Examiner	Art Unit	
	Kaj Olsen	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) *32-37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1-9-2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 32-37 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper dated 2-9-2004.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. In claim 1, the preamble states "[i]n a system for monitoring gas concentrations..., a gas sensor comprising", which renders it unclear if applicant is claiming an entire unspecified monitoring system or just the gas sensor for that system (i.e. the monitoring system is the intended use). Claim 31 by contrast makes it clear the invention is drawn to a monitoring system. Because the applicant refers to claim 1 in the dependent claims only as "[t]he gas sensor of claim 1", the examiner will interpret claim 1 as being drawn to the gas sensor itself, but clarification is requested.

5. Claim 1 specifies an "at least one opening" but never specifies what possesses the opening.

6. Claim 31 is indefinite because it claims a second sampling probe "of the same type as the first sampling probe". It is unclear what structure is being explicitly recited by the language "same type".

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-10, 15-18, 20-27, 29 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Reber (USP 4,944,861).

9. Reber discloses a gas sensor comprising an outer shell 41 disposed in a stream of gas having at least one opening 44 in fluid communication with the gas to be monitored. See fig. 3 and col. 5, lines 29-43. Reber further discloses a solid electrolyte cell 11 disposed within the outer shell with a seal that forms a sensing chamber (i.e. reference gas chamber) isolated from the gas to be monitored. See fig. 1 and col. 2, line 48 through col. 3, line 20. Reber further discloses first and second electrodes disposed within the reference gas chamber and the in the outer shell respectively (see claim 1). The second electrode would be in close proximity to the opening giving the claim language its broadest reasonable interpretation.

10. With respect to Reber being utilized for a monitoring of flue gases in a combustor, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability (see 112 rejection above). With respect to the

generation of voltages across the electrodes, that is also only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. However, see col. 2, lines 33-37.

11. With respect to the reference gas conduit, see col. 3, lines 8-20.

12. With respect to the conduit in the outer shell, see fig. 3 and col. 5, lines 34-43.

13. With respect to the delivery of calibration gas or the extraction of sample flue gas, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

14. With respect to the seals, the tip of 11 constitutes one seal while the sealing structure set forth in fig. 1 and col. 2, line 48 through col. 3, line 20 constitutes another seal.

15. With respect to the thermocouple, see col. 3, lines 5-11.

16. With respect to the various claims about how the signals from the sensor are processed, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

17. With respect to the type of unclaimed combustor utilized, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability (see 112 rejection above).

18. With respect to the use of stabilized zirconia, see col. 3, lines 33-45.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

21. Claims 10, 13, 14, 19, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber in view of Yokota et al (USP 6,254,749 B1).

22. With respect to claims 10, 13, 14 and 31, Reber set forth all the limitations of the claims, but did not explicitly recite the set forth third electrode cooperating with the first and second electrodes. Yokota teaches in an alternate gas sensor that two gases can be monitored simultaneously by providing two different electrodes on the outside of the solid electrolyte element so that oxygen and carbon monoxide can be simultaneously measured. See fig. 4 and col. 9, line 56 through col. 10, line 11. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Yokota for the sensor of Reber such that other gas components can be simultaneously monitored thereby increasing the utility of the sensor to other gas constituents. With respect to claim 31, it appears to the examiner that the specified "second sampling probe" is meant to read on the same configuration

of an additional electrode that is specified for claim 11 (see 112 rejection above). With respect to the combustion monitoring system of claim 31, see Yokota, col. 1, lines 40-55.

23. With respect to claim 19, Reger discloses all the limitations of the claim, but did not explicitly specify the use of porous electrodes. However, it is notoriously well known that gas sensor electrodes should be porous so as to increase the effective surface area of the electrode. In particular, this is demonstrated by Yokota, which teaches that the electrodes should preferably be porous. See col. 7, lines 63 and 64. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Yokota for the gas sensor of Reber so as to increase the overall surface area of the electrode.

24. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reber in view of Yokota as applied to claim 11 above, and further in view of Takahashi et al (USP 5,705,129).

25. The references set forth all the limitations of the claim, but did not explicitly recite the use of a filter to react with a second gas (i.e. an interferent) to eliminate its effect on a measurement of the intended gas. Takahashi teaches in an alternate sensor that a catalytic filter 6 can be utilized to react with an interferent prior to the exposure of the measurement gas to the electrode (see abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Takahashi for the sensor of Reber and Yokota in order to remove the influence of interferents from the sensor response.

26. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reber in view of Maeda et al (USP 4,430,192).

27. Claims 1-31 are rejected in the alternative under 35 U.S.C. 103(a) as being unpatentable over Reber with or without the teachings of Yokota and Takahashi in further view of Maeda.

28. With respect to claim 28, Reber set forth a number of structural elements that would read on the defined "support conduit" giving the claim language its broadest reasonable interpretation. See fig. 1 as an example. However, Reber did not explicitly teach affixing that conduit to a wall. Maeda teaches in an alternate gas sensor that the conduit supporting the gas sensor can be fastened to the wall of the device being monitored. See fig. 1-3 and 5; and col. 1, lines 15-33. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Maeda for the sensor of Reber because the walls of a gas conduit is a convenient location to mount a gas sensor to.

29. With respect to all the claims in the alternative, Reber (with or without the teachings of Yokota or Takahashi) set forth all the limitations of the claims when one disregards the limitations drawn to the use of the gas sensor for monitoring the flue gas of a combustor. However, even if the examiner were to give weight to the limitations drawn to the combustor, the use of oxygen gas sensors, like that of Reber, for the monitoring gases in furnaces are well known in the art and . This is demonstrated by the teaching of Maeda where an analogous gas sensor is being utilized to monitor the output of a combustion furnace (col. 1, lines 15-33; and col. 6, lines 30-46. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the sensor of Reber (with or without the teachings of Yokota or Takahashi) for a combustor as taught by Maeda in order to extend the utility of a sensor with an excellent hermetic seal that can withstand repeated temperature cycling (Reber, col. 1, lines 26-64) to other applications requiring such advantages. With respect to placing the sensor in the post-flame zone, it would have been obvious to do so both to avoid exposing the gas sensor to a

direct flame and to ensure that one is monitoring the gas after complete combustion (i.e. the gas in the flame itself would be an intermediate combustion state).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 6:30 A.M. to 4:00 P.M. and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kaj Olsen Ph.D.
Primary Examiner
AU 1753
March 15, 2004